

« Case Report»

Detection of Coarctation of Aorta during Preschool Health Screening Program: A Case Report

Sara Sadrzadeh¹

I-MD.

1-Department of Dermatology, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

*Corresponding Author:
Sara Sadrzadeh; Department of Dermatology, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
Tel: 09166111745
Email: Sr.sadrzadeh@gmail.com*

Abstract

Aortic coarctation is a congenital malformation of the aorta, which is usually diagnosed and corrected early in life (1). Systemic hypertension, accelerated coronary heart disease, stroke, aortic dissection, and heart failure are common complications in adults who have not undergone correction for their coarctation or were operated later in life (4). In this case report, we report on a 6-year-old boy with asymptomatic coarctation of aorta. The patient's high blood pressure was detected during a screening program held in Iran for all the children at preschool age. The patient underwent a surgery and was in good clinical condition afterward. This case was an important example of the significance of preschool examination that can prevent later sudden or irretrievable cardiovascular accidents. Given that there are numerous cases of careless and incorrect filling of health screening forms by some physician, we believe that this case can be a good example for those who do not pay enough attention to doing physical examination in screening programs.

Keywords: aortic coarctation, preschool screening, hypertension in children

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Introduction

Aortic coarctation is a congenital vascular lesion typically diagnosed early in life, accounting for 5 to 10% of all congenital cardiovascular malformations, but may go undetected until adulthood. The etiology can be congenital or acquired. Older infants and children remain asymptomatic resulting in delayed diagnosis. In young children, coarctation of aorta may present with hypertension, and/or murmurs(2). The age at which people with coarctation of the aorta are diagnosed depends on the severity of the condition. If the aortic coarctation is severe, it is usually diagnosed during infancy (3).Diagnosis is usually based on clinical suspicion and physical findings. Death in these patients is usually due to heart failure, coronary artery disease, aortic rupture/dissection... Treatment consists of aggressive hypertension therapy, endocarditis prophylaxis and corrective treatment.Coarctation repair after early childhood does not prevent persistence or late recurrence of systemic hypertension. As a result, correction of coarctation should be performed in infancy or early childhood to prevent the development of chronic systemic hypertension (4).Therefore, early diagnosis is of vital importance. In Iran, there is a preschool health screening program for all children entering elementary school, in which a complete physical examination is done including measuring blood pressure (BP). However, some general practitioners (GPs) do not spend enough time in doing careful physical examination, particularly when the child appears healthy. Here we report on a case of coarctation of aorta, detected by a GP during preschool screening in an asymptomatic child.

Case report

A 6-year-old boy was brought to a clinic in his small town Somalleh in Khuzestan province in Iran, for preschool health

screening including a general history and physical examination. He was an ordinary kid with no evident complaint. The patient had normal past medical history. Physical examination showed blood pressure 160/90 in both arms, a heart rate of 80 beats/minute and a systolic murmur. Femoral pulses were not palpable. He was referred to pediatrician for more evaluations. His high blood pressure was confirmed and he was referred to hospital for controlling hypertension (HTN) and starting the evaluations.Lab data was normal. His echocardiogram showed coarctation of aorta, left ventricular hypertrophy (LVH) and Patent ductus arteriosus. The patient underwent a cardiac catheterization in which severe aortic coarctation was diagnosed. The patient was then referred to cardiothoracic surgery. The procedure was achieved without major bleeding and any adverse event. The coarctated segment was repaired and PDA was closed. Total hospital stay after procedure was only four days. After a 6 month follow-up, the patient was in good clinical condition.

Discussion

Aortic coarctation is a congenital vascular lesion typically diagnosed in early life, accounting for 5 to 10% of all congenital cardiovascular malformations' but it may go undetected until adulthood. The etiology can be congenital or acquired (like inflammatory disease, severe atherosclerosis). Older infants and children remain asymptomatic resulting in delayed diagnosis. Among the symptoms are chest pain with exercise, cold extremities, and claudication with physical activities. In young children, coarctation of aorta may present with hypertension, and/or murmurs resulting from collaterals or associated heart defects (2). The age at which people with coarctation of the aorta are diagnosed depends on the severity of the

condition. If the aortic coarctation is severe, it is usually diagnosed during infancy. Testing for coarctation of the aorta in utero (while the baby is still in the womb) is often not possible (3). Diagnosis is usually based on clinical suspicion and physical findings. The latter include blood pressure difference between the upper and lower extremities, pulse delay and systolic murmur over the thoracic spine. Other manifestations can include bicuspid aortic valve systolic ejection sound and/or murmur and neurological complaints. Prognosis and survival depend on the disease severity and patient's age at the time of correction. Death in these patients is usually due to heart failure, coronary artery disease, aortic rupture/dissection, concomitant aortic valve disease, infective endarteritis, or cerebral hemorrhage. Treatment consists of aggressive hypertension therapy, endocarditis prophylaxis and corrective treatment for coarctation lesions with a high gradient. Indications for intervention in children include heart failure, a peak instantaneous pressure gradient across the coarctation >20 mmHg, and/or radiologic detection of collateral circulation. Systemic hypertension, accelerated coronary heart

disease, stroke, aortic dissection, and heart failure are common complications in adults who have not undergone correction for their coarctation or were operated later in life. Coarctation repair after early childhood does not prevent persistence or late recurrence of systemic hypertension. As a result, correction of coarctation should be performed in infancy or early childhood to prevent the development of chronic systemic hypertension (4). In this case report, our patient was asymptomatic and his problem was diagnosed during preschool health screening. Detection of coarctation of aorta in children following acute hemorrhagic stroke, acute abdominal pain, were reported up to our knowledge (5,6). In conclusion, to prevent the occurrence of the complications like above, early screening with physical examination including measuring blood pressure is advisable. This patient reminded general practitioners not to neglect careful performing of physical examination especially measuring blood pressure in national screening programs for children. We believe that this case can be a good example for those who do not pay enough attention to doing physical examination in screening programs.

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